Myths and Fact about Dietary Fats and Heart Disease

Judith Wylie-Rosett, EdD, RD
Albert Einstein College of Medicine
Bronx, New York

Speaker Disclosures

Presenter: Judith Wylie-Rosett, EdD, RD

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Honorarium: Unilever

Objectives

- Identify Current Recommendations for Dietary Fat Intake
- Describe Types of Fat in the Diet and Impact on CVD Risk
- Identify Food Sources of “Beneficial” and “Harmful” Fats
- Practical Tips for Patient Adherence and Behavior Change

Optimal Mix of Macronutrients*

- The Dietary Reference Intakes (DRIs)--
  - 45–65% carbohydrate
  - 20–35% fat
  - 10–35% protein

* Calorie intake appropriate to weight goals.

AHA Lifestyle Recommendations

- Balance calorie intake and physical activity to achieve or maintain a healthy body weight
- Consume a diet rich in vegetables and fruits
- Choose whole-grain, high-fiber foods
- *Consume fish, especially oily fish, at least twice a week*
- Minimize intake of beverages and foods with added sugars
- Choose and prepare foods with little or no salt
- If you consume alcohol, do so in moderation

Circulation 2006;114:82-96; *Circulation* 2009; 119:1161-75

AHA Lifestyle Recommendations

- *Limit intake of saturated fat to 7% of energy, trans fat to 1% of energy, and cholesterol to 300 mg/d by*
- *Choosing lean meats and vegetable alternatives*
- *Selecting fat-free (skim), 1% fat, and low-fat dairy products*
- *Minimizing intake of partially hydrogenated fats*

Circulation 2006;114:82-96; *Circulation* 2009; 119:1161-75

AHA Healthy Lifestyle Tips

- 2,000 calories daily

- **Fruits and vegetables:** At least 4.5 cups a day
- **Fish (preferably oily fish):** At least two 3.5-ounce servings a week
- **Fiber-rich whole grains:** At least three 1-ounce-equivalent servings a day
- **Sodium:** < 1,500 mg a day
- **Sugar-sweetened beverages:** No more than 450 calories (36 ounces) a week

Americanheart.org Accessed March 11, 2011

AHA Healthy Lifestyle Tips

- Other Dietary Measures:

- **Nuts, legumes and seeds:** At least 4 servings a week
- **Processed meats:** No more than 2 servings a week
- **Saturated fat:** Less than 7% of total energy intake

Americanheart.org Accessed March 11, 2011

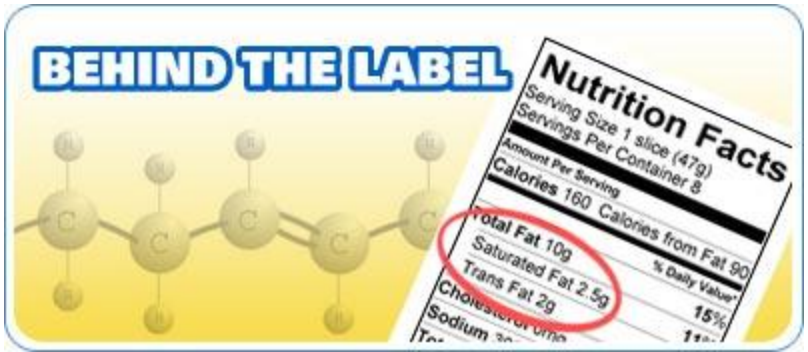
Fat: Quantity and Quantity Recommendations

AHA	2010 Dietary guidelines	Am Diabetes Assoc	Am Cancer Society
Overall dietary pattern	**Similar**	**Similar**	**Similar**
Healthy weight	Similar	Similar	Similar
Normal lipids, blood pressure, glucose	Addresses chronic disease risk	Similar ABCs- A1c, BP Chol	Emphasis on cancer risk
Physical activity	Similar	Similar	Similar
Fat* **< 7% sat, <1% trans fat, < 300 mg chol.**	**< 10% sat, trans ↓ < 300 mg chol**	**Similar**	**Similar**
Environment and Policy Issues	Guides policy	Health care systems	Access and environment Issues

* Daily Reference Intake guides the quantity of fat with less focus on percent of total energy from fat. Evidence accumulating with regard to specific fatty acids.

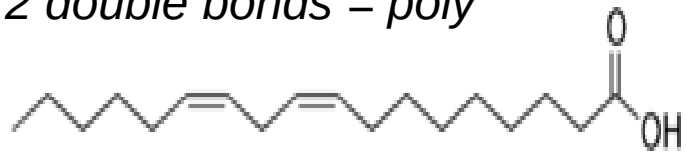
Types of Fat

- Omega 3 fatty acids
- Omega 6 fatty acids
- Saturated fatty acids
- Monounsaturated fatty acids
- Polyunsaturated fatty acids
- Trans fatty acids



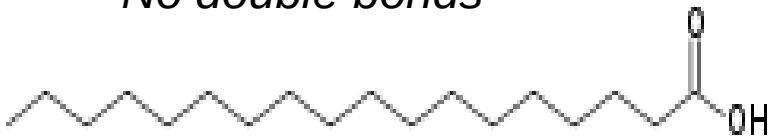
Types of Fat

Unsaturated fatty acid (Cis)
1 double bond = mono
≥ 2 double bonds = poly



Location of 1st double bond for omega 3 vs. 6

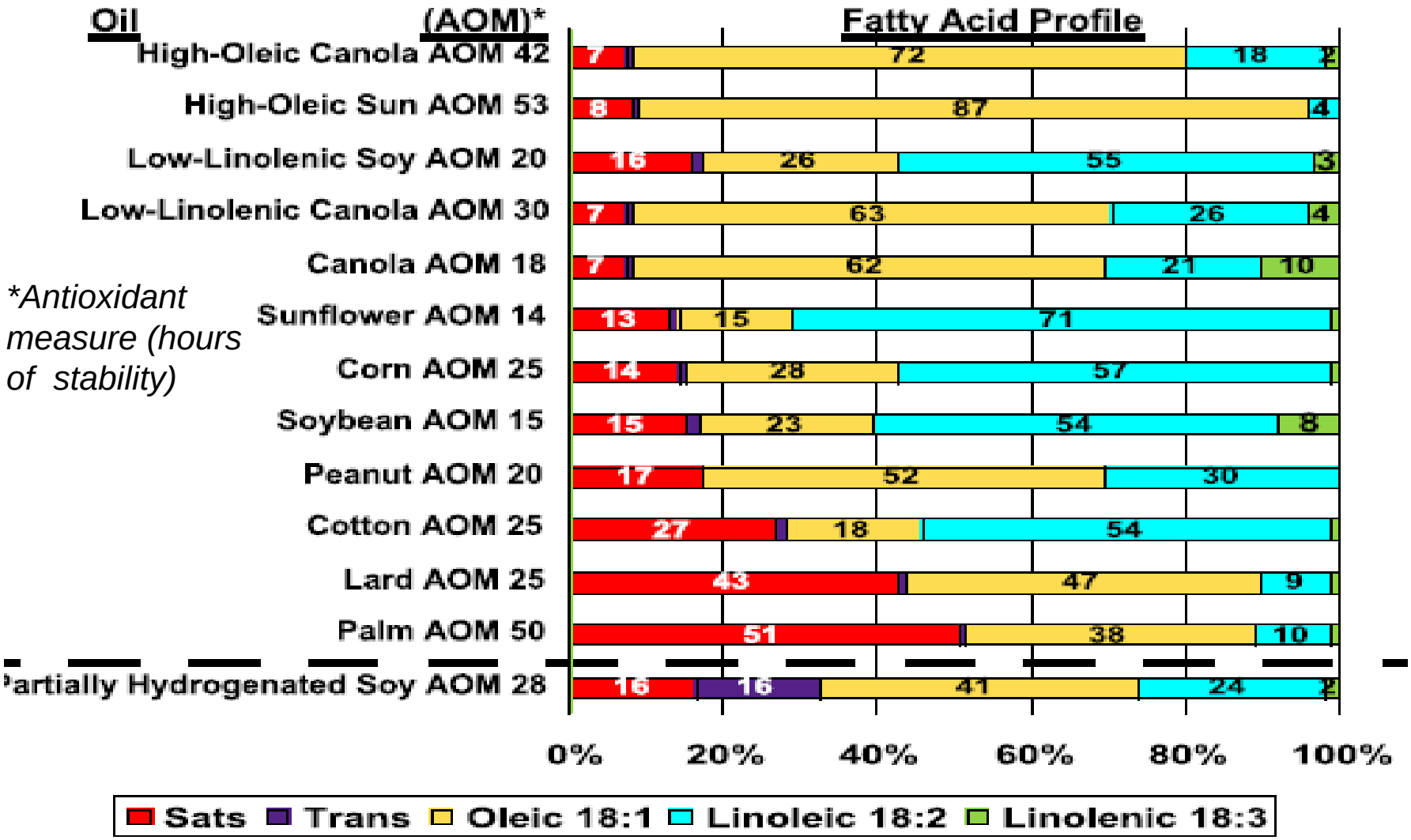
Saturated fatty acid
No double bonds



Partial Hydrogenation to create trans fatty acids
1 double bond left

Introduced -1911

Comparison of Fats



**Antioxidant measure (hours of stability)*

Eckel et al. *Circulation* 2007; 115:2231-46.

Omega 3 Fatty Acids

- According to AHA Very Beneficial to CVD, help with rhythm, blood pressure and plaque
- Found in fatty fish, shellfish, flaxseeds, walnuts, canola oil
- 2 servings of fish/week – supplements maybe needed if cholesterol high
- Current guidelines 1000 mg/day for those with CVD

Americanheart.org Accessed March 11, 2011.

Omega 6 Fatty Acids

- According to AHA Beneficial to CVD, help reduce cholesterol
- Nuts, seeds, sunflower, safflower, corn and soybean oils
- Up to 5 – 10% of calories (12 – 22gm/day)

Americanheart.org Accessed March 11, 2011.

Monounsaturated Fatty Acids

- According to AHA Good fat choices can help reduce cholesterol
- Canola oil, avocado
- A part of total, daily fat intake

Americanheart.org Accessed March 11, 2011.

Saturated Fatty Acids

- According to AHA avoid or limit – they increase cholesterol
  (new controversy on SFA??)
- Animal foods, coconut and palm oils
- No more than 7% of calories

Americanheart.org Accessed march 11, 2011.

Saturated Fatty Acids: Differences

Fatty acid	Structure	Common Food Sources	Biological Action
Lauric Acid	12:0	Coconut oil	Raises total, LDL, and HDL cholesterol, increases some thrombolic factors
Myristic Acid	14:0	Butter fat, coconut oil,	
Palmitic Acid	16:0	Most fats and oils	
Stearic Acid (*substitute for trans fat in baking)*	**18:0**	**Most fats and oil, cocoa butter. Fully hydrogenated oils *(high stearic soybean oil)***	**Does not affect total LDL or HDL cholesterol,**

J Am Diet Assoc 2007;107:1599-1611; Hunter et al. Am J Clin Nutr 2010;92:46-63

Trans Fatty Acids

- According to AHA Avoid/limit since trans increase LDL and lower HDL
- Partially hydrogenated oils in some margarines, baked foods and commercially fried foods
- No more than 1% of total calories

Americanheart.org Accessed March 11, 2011.

Puff Pastry Substitution Challenges

Eckel et al. *Circulation* 2007; 115:2231-46

Interpretating Research with High Media Coverage

Plasma Trans-Palmitoleic Acid* Incidence of Diabetes

Plasma level	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	p
Incident diabetes cases ; n	93	68	59	46	38	
Hazard Ratio (95% CI)	1.0 (ref)	0.79 (0.54-1.15)	0.89 (0.58-1.33)	0.41 (0.27-0.64)	0.38 (0.24-0.62)	<0.001

* Produced by ruminant animals and found in dairy products

Mozaffarian et al. *Ann Intern Med* 2010; 153:790-799.

Choosing Healthy Fats

- AHA recommends:
- Most people should consume at least 5 to 10% of their total daily calories from omega-6 fatty acids
- Replacing saturated fats with polyunsaturated fats, natural sources of omega-6, may help reduce heart disease risk
- Higher intakes of omega-6 may improve insulin resistance, reduce diabetes risk and lower blood pressure

Harris, W et al. Omega 6 Fatty Acids and Risk for Cardiovascular Disease. Circulation 2009; 119: 902.

American Heart Association

Website -Face the Fats

Snack options

www.americanheart.org

American Heart Association's

An easy-to-use tool calculates:

1. personalized daily calorie needs
2. recommended range for total fats
3. limits for bad fats: saturated and *trans*

http://www.myfatstranslator.com/

Heart Health Tips

- Control saturated fats by choosing lean meat and poultry and low or non-fat dairy
- Limit trans fats by avoiding commercial baked or fried foods *Unless Trans Free (defined as < 0.5 g serving)*
- Avoid or limit partially-hydrogenated oils

Healthy Fats

- AHA Very Beneficial Fats –
  Fatty Fish, Flax, Walnuts, Canola Oil

- AHA Beneficial Fats –
  Nuts, Seeds, Vegetable oils (sunflower, safflower, corn and soy)

- AHA Good Choice Fats –
  Canola and Olive Oil

Americanheart.org Accessed March 11, 2011

Bad Fat Choices

- Avoid or limit:
- Saturated fats to no more than 7% of daily calories
- Trans Fats to no more than 1% of daily calories

Americanheart.org. Accessed March 11, 2011.

Shifting to Healthier Fats

- Recipe changes should be gradual
- At the table changes can be rapid
- Think about role fat plays in recipe
- View overall diet balance

Role of Fat in Satiety

- Fat stabilizes and carries flavor
- Fat tenderizes in baking and holds moisture
- Fat keeps sauces, gravies, etc smooth
- Fat lubricates and prevents sticking

Fat Changes

- Goal of changing fat – preserve flavor while boosting healthfulness
- Use tub margarines or oils for spreading
- Use less oil when substituting for solid fats in recipes
- Reduce total fat in a recipe by about ¼

Fat Changes

- Substitute other foods for fat in recipes
- Choose fat free yogurt instead of sour cream
- Use non-stick sprays when preparing pans
- Boost other flavors to maintain satiety

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AHA Lifestyle Guidelines

- Balance dietary calories with physical activity to maintain normal weight
- Engage in 60 min of moderate to vigorous play or physical activity daily
- Eat vegetables and fruits daily and limit juice intake
- Use vegetable oils and soft margarines low in saturated fat and *trans* fatty acids instead of butter or most other animal fats in the diet

Circulation 2009; 119:161-1175.

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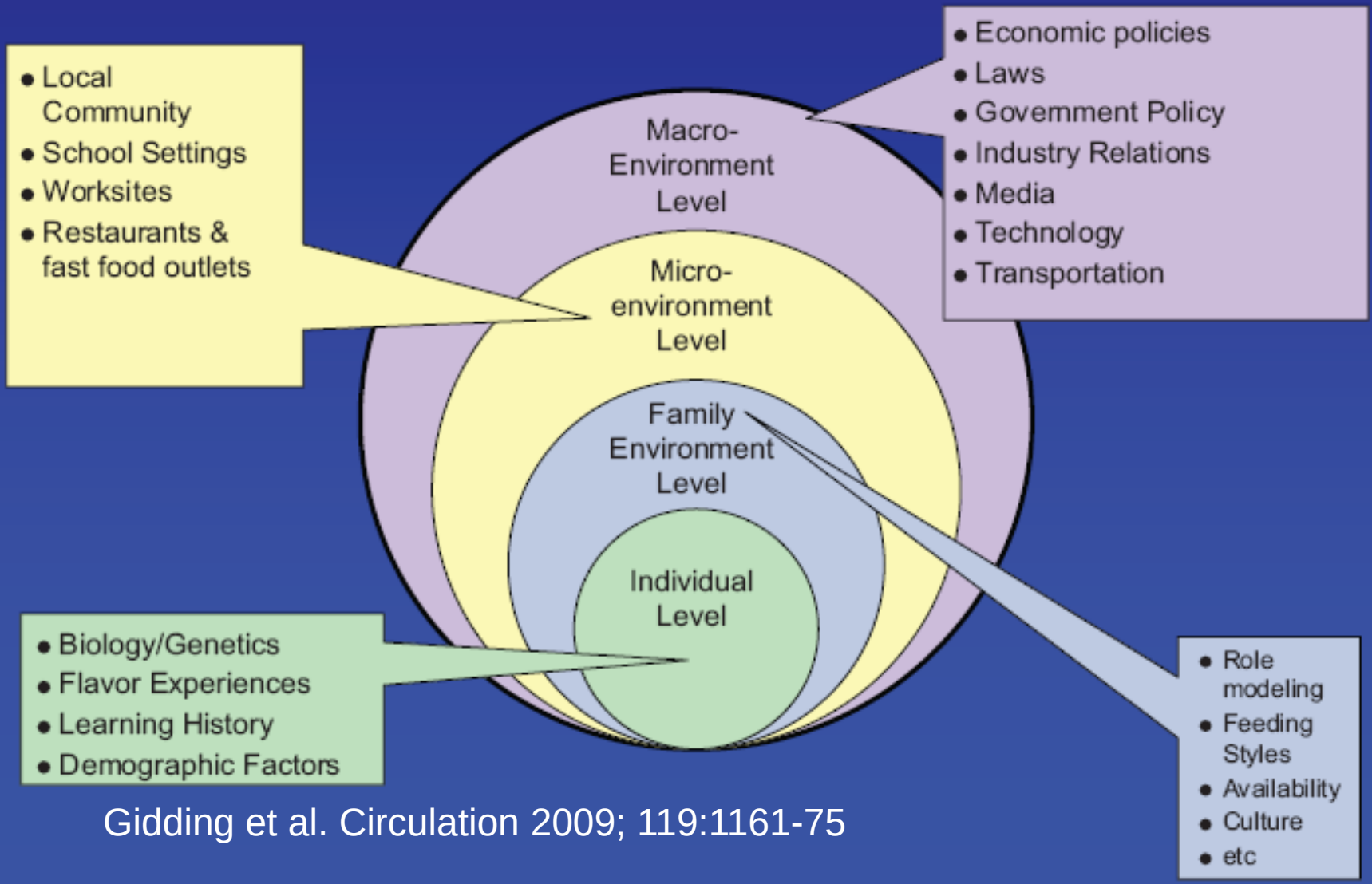
AHA Lifestyle Guidelines

- Eat whole-grain breads and cereals rather than refined-grain products
- Reduce the intake of sugar-sweetened beverages and foods
- Use nonfat (skim) or low-fat milk and dairy products daily
- Eat more fish, especially oily fish, broiled or baked
- Reduce salt intake, including salt from processed foods

Circulation 2009;119:1161-75.

Influencing Food Choice

A Multi-level Framework for Identifying Facilitators or Barriers to Attaining AHA Dietary Recommendations



Gidding et al. Circulation 2009; 119:1161-75

Case Study -

AJ -- 66 Year old White female

Social Hx: retired, lives with 2 grown sons, husband died 6 mo.ago.

Family Hx: premature CVD—father died after an MI at age 44

Medical Hx: Patient has been on statin therapy to lower LDL cholesterol,(discontinued -LFT's). Hypothyroidism, Depression

Pt has a mechanical tricuspid valve, placed 25 years ago

Anthropometric Measurements: Ht. 5'2" Wt. 159 lbs. BMI 29.1

Physical exam findings- physical appearance [abdominal obesity, xanthomas], BP 152/90 Well nourished with abdominal obesity

Pertinent Meds: Levothyroxine,75mcg daily, Warfarin 5mg daily, Atenolol 50mg daily, Fluoxetine 20mg daily

Pertinent labs:

Cholesterol (mg/dL) total 255, HDL 25, LDL 152; TG (mg/dL) 386

Glucose (mg/dL) 112; HbA1c 6%

ALT 40 units/L, AST 46 units/L, TSH 4.16 uIU/mL

Case – Nutritional Issues

AJ eats only one meal per day plus sugared tea throughout the day; frequent use of high fat meats 4x/week (meats with gravy, macaroni and cheese) and large servings (1-2c) of starch. The patient came with a limited knowledge base regarding dietary fats that raise cholesterol. She has limited fruit and vegetable intake.

Barriers to Behavioral Goals:

She appeared to grasp the concepts well, but depression related to recent loss of husband 6 months ago limits her interest in making significant changes.

Barriers towards Biochemical, Anthropometric, Physical and Food/Nutrition Goals:

(see barriers to behavioral goals)

Influencing Food Choice

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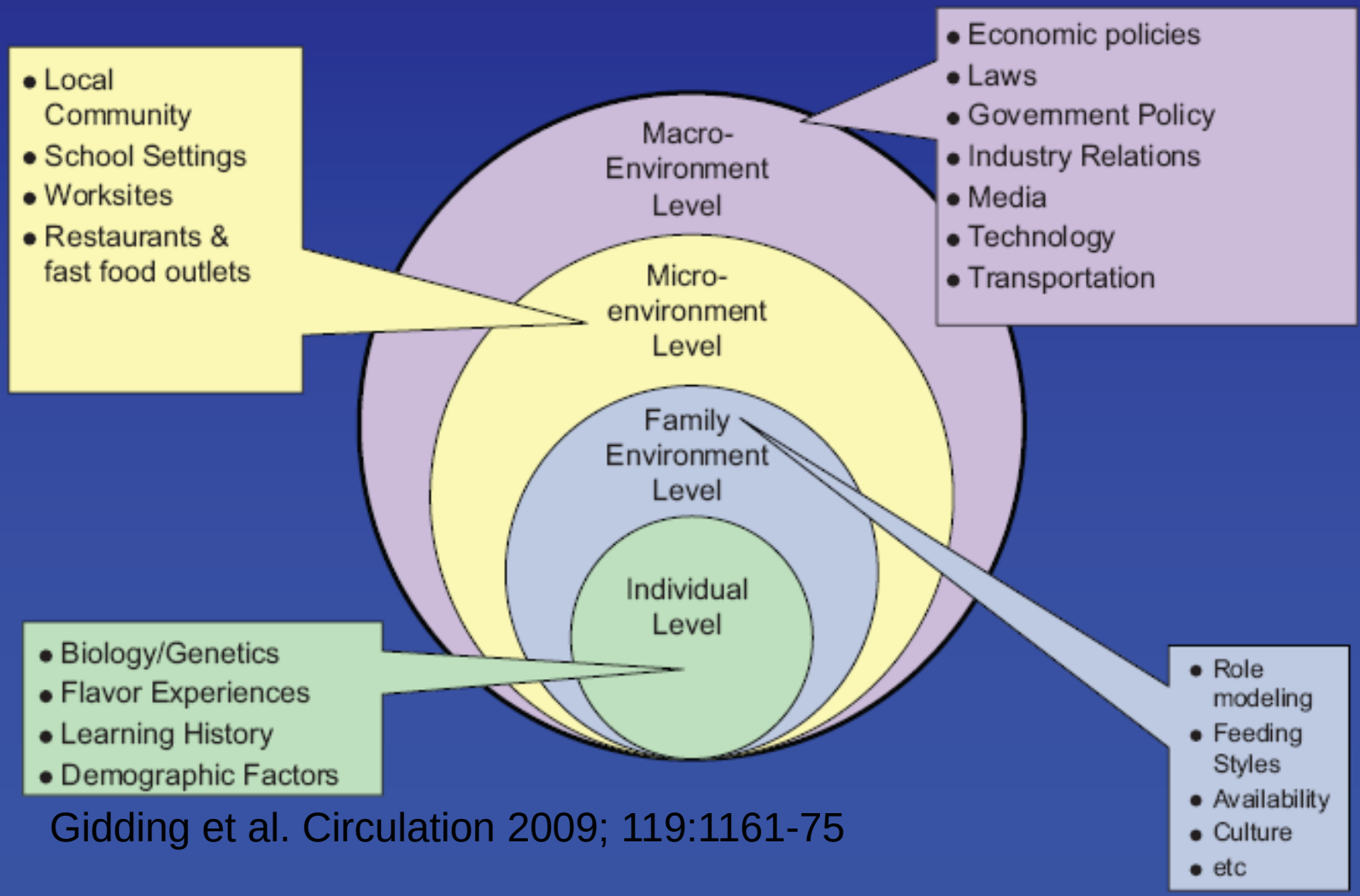

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Summation

- Total Fat impacts disease risk – type of fat important
- Limit Sat Fats to <7% of calories
- Trans fats as low as possible
- Make changes gradually to shift palate as well
- Choose more whole grains, fruits and vegetables

Thank You!